Higher education in economic transformation

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Abstract: Africa’s educational policies over the last two decades have stressed the role of primary education in social development. This paper argues that there is a need to balance this bias with new policies and practices that support the evolution of universities that contribute directly to community development. The paper uses examples from Costa Rica, Ghana, Zambia and South Korea to illustrate possible roles that universities can play in Africa’s economic development. It outlines specific policy measures needed to strengthen the role of higher education in development in general and in community improvement in particular. It particularly identifies measures related to curriculum reform, changes in pedagogy and management of universities as key areas requiring policy attention.

Keywords: Africa; agriculture; community development; Costa Rica; curriculum; Ghana; education; entrepreneurship; pedagogy; universities.


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1 Introduction

Higher education is increasingly being recognised as a critical aspect of the development process, especially with the growing awareness of the role of science, technology and innovation in economic renewal. While primary and secondary education have been at the focus of donor community attention for decades, higher education has been viewed as essential to development only in more recent years.

Today’s economic circumstances make higher education a more compelling need in African countries than it has ever been. Key factors in this change include the increased demand for higher education, owing to improved access to schooling; pressing local and national concerns that require advanced knowledge to address; and a global economy that favours participants with high technological expertise.

2 Higher education and economic growth

Universities and the societies they are embedded in co-evolve, shaping each other in a variety of ways. This co-evolution is an uncertain process, involving continuous dialogue and interaction. Globalisation and the search for sustainability have cast a new spotlight on the role of knowledge institutions in general, and universities in particular. This focus is a product of the view that every society creates the university it needs; and universities in turn help to shape the character of the society in which they are located.

As nations become more integrated, so do universities extend their global influence and amplify their impact. The modern world of innovation is thus a complex network of institutions tied together by flows of knowledge (Sagasti, 2004). Universities are key nodes in this global institutional ecology. It is within this institutional context that universities can deliver on their economic growth goals.

Universities and other institutions of higher education, such as technical colleges, have been arguably the most under-utilised institutions in efforts to promote sustainable development. Today, African universities are largely places to train the labour force, but not a locus for productive activities – yet such institutions remain the loci of scientific and technological information, playing a critical role in the leadership of the sustainability transition.
In facilitating the development of business and industrial firms, universities can contribute to economic revival and growth in their surrounding regions. The university can conduct Research and Development (R&D); create its own spin-off firms; be involved in capital formation projects, such as technology parks and business incubator facilities; and introduce entrepreneurial training into its curricula. It can also ensure that students become acquainted with the problems faced by companies – through internships, for example.

Universities should also ensure that students appreciate the relationships between science, technology, innovation and development, to be sensitive to societal needs. This approach is based on the strong interdependence of academia, industry and government (Etzkowitz, 2003).

The first generation of post-independent African universities focused on nation building, with emphasis on providing functionaries for the civil service (Amonoo-Neizer, 1998). Despite the changed circumstances, most universities have hardly adjusted their operations (Oyelaran-Oyeyinka and Barclay, 2004). Today, African countries are facing new challenges related to participation in the global economy, meeting basic needs, and contributing to the transition towards sustainability. These require increased investment in generating, adapting and diffusing available technical knowledge to local uses.

The 1980s witnessed the emergence of overt public criticism of universities for being out of touch with the development realities of their countries. Universities were perceived as elitist centres of privilege, far removed from the national endeavour to find solutions to the problems of development. In response to these challenges, a number of African countries are exploring how universities could contribute directly to economic transformation through closer interactions with the private sector and government.

Africa will need to change the way that universities operate. First, countries will need to consider universities as productive entities, not simply producers of a trained workforce. In other words, universities will need to act as incubators of new enterprises. Second, universities and other technical institutes must integrate with their communities. So far, most major universities are located in capital cities. Their value would greatly improve if they could create branches in rural areas. If universities cannot reinvent themselves to play a leading role in the transition towards sustainability, enlightened governments should charter other categories of institutions to perform this community function.

### 3  Higher education and community development: illustrations

#### 3.1  Entrepreneurial education: Costa Rica’s EARTH University

Inspired by the need for new attitudes and paradigms, and committed to educating a new kind of agriculture professional, EARTH University was created in 1990 as a non-profit, private, international university dedicated to contributing to the sustainable development of the tropics through education in the agricultural sciences and natural resource management. EARTH’s mission is to educate leaders with ethical and human values in order to construct a just society and contribute to the sustainable development of the humid tropics. Through its academic, research and outreach programs the University seeks to develop innovative solutions that promote improvements in the quality of life of the inhabitants of the humid tropics.
With nearly 1100 graduates, EARTH admits about 110 students each year and has a total student population of approximately 400. Located in the Atlantic lowlands of Costa Rica, the University is an international learning community, with students from 24 countries (primarily from Latin America and the Caribbean), and faculty from 22 countries worldwide. Thanks to generous support provided by governments, foundations, companies and concerned individuals, EARTH is able to provide scholarships to promising young people of limited resources from remote and marginalised regions who demonstrate potential as a future agent of change. Approximately 80% of EARTH’s students receive full or partial scholarship assistance. All students live on campus for four intensive years, and complete three fifteen week trimesters each year.

EARTH has developed an innovative, learner-centered and highly experiential academic program. The educational process at EARTH stresses the development of attitudes necessary for graduates to become effective agents of change. Leadership, identification with the inhabitants of the region, a concern for conservation of the natural resources of the tropics, an entrepreneurial spirit and the skills and commitment for life-long learning are considered attributes of greater importance than the retention of information.

As experiential learning focuses on the process rather than content, it is particularly well suited to the complex and dynamic world of agriculture and rural development. Experiential learning is focused on the learner, as opposed to the teacher or the subject matter. Most importantly, experiential learning encourages the integration of theory and the acquisition of practical skills within the context of the ‘real world.’ There are four activities in particular within the curriculum that embody EARTH’s experiential approach to learning.

The first is the Work Experience activity, which is taken by all first, second, and third year students and continues in the fourth year as the Professional Experience course. In the first and second years, students work in crop, animal and forestry production modules on EARTH’s 3,300-hectare farm. In the first year, the work is largely routine and the experience centers on the acquisition of basic skills, work habits and general knowledge and familiarity with production. In the second year, the focus changes to management strategies for these same activities.

During the fourth year of study, Work Experience is replaced with Professional Experience. In this course students identify work sites or activities on campus, which in some way correspond with their career goals. The student is then responsible for contacting the supervisors of those campus operations, requesting an interview, and soliciting ‘employment.’ If a supervisor agrees, together they develop a work plan, and the student is then responsible for carrying it out, dedicating a minimum of ten hours per week to the ‘job.’

The second activity is actually an extension of the Work Experience course, in which third-year students work on an individual basis with small, local producers on their farms, and together in small groups in community development activities. EARTH’s community outreach program aims to consolidate community development as an integral part of the university’s learning system. Community outreach is considered an important means for developing critical professional skills in students, while at the same time working to improve the quality of life in nearby, rural communities. Frequent interaction of students with rural families fosters greater understanding of the dynamics and prevailing social/economic realities within rural communities, thus creating professionals that are
more knowledgeable and socially aware, and better able to work effectively with rural communities.

The third year internship is the third course that exemplifies EARTH’s emphasis on experiential learning. The 15-week internship is required for all students in the third trimester of their third year of study. It is an opportunity for them to both put into practice all they have learned during their first three years of study. For many of them it is also a chance to begin making connections that may eventually lead to employment after graduation. The international character of the institution allows many students the opportunity to follow their interests, even when they lead to internship destinations other than in their home country.

The fourth activity is the Entrepreneurial Projects Program. EARTH University’s program promotes the participation of its graduates in the private sector as a critical means by which the institution can achieve its mission of contributing to the sustainable development of the tropics. The development of small and medium-sized enterprises is seen as a powerful means of creating new sources of employment and improving income distribution in rural communities of the developing world, as well as to slow the increasing migration from rural to urban areas. These enterprises can be both economically viable and socially and environmentally sustainable. For this reason, EARTH has placed great importance on the development of an entrepreneurial spirit and skills in its students. Coursework in business administration and economics, combined with practical experience gained in the Student Entrepreneurial Projects course, provides students with a solid base for engaging in business ventures upon graduation.

This course provides students the opportunity to develop a business venture from beginning to end during their first three years at EARTH. Small groups of between four and six students, of different nationalities, decide upon a business activity related to the work of the University, conduct a feasibility study (including financial, social and environmental criteria), borrow money from the University and carry out the project, including the marketing and sale of the final product. After repaying their loan, with interest, the group shares the profits. Entrepreneurial projects give students ‘hands-on’ experience in planning and carrying out commercial production projects, instill an entrepreneurial spirit in students, foster teamwork, and connects them to the demands of the market.

With approximately 17% of its more than 1000 graduates now running their own businesses, and many more working hard to accumulate capital to follow in their footsteps, the university is making important strides in producing job creators. EARTH graduates are assuming important positions of leadership in their governments, businesses and communities, and their influence is increasingly being felt.

This entrepreneurial focus has permeated all aspects of the University’s operations and EARTH currently manages its own profitable agribusiness, which has resulted in strong relationships with the private sector and influenced industry-wide change.

When EARTH University acquired its 3,300 ha campus in the late 1980s, the management team decided to continue to run and operate the commercial banana farm located on the property – in spite of the fact that the banana industry was characterised by many practices that were inconsistent with the principles upon which the institution was founded. After taking over the farm, the University conducted research and implemented a series of changes designed to promote more environmentally and socially sustainable production.
Innovations have included replacing the pesticide-coated bags that cover the developing bananas with a bag coated with natural insect deterrents, creating a recycling programme for the plastic bags, and manufacturing paper out of the banana stalk waste generated in the packing process. EARTH has made important contributions in transforming banana production into a more sustainable endeavor. On the social side, EARTH began an aggressive training program for workers and equipped them with necessary safety equipment to reduce exposure to agricultural chemicals. Working conditions, compensation and benefits were improved, as well as educational and training opportunities. Many of these changes have been implemented by banana producers in the region and adopted by industry leaders.

The commercial farm is also an integral part of the academic programme, giving students an opportunity to experiment with sustainable production methods and pesticide and nematocide reduction on a functioning, large-scale farm. In addition to fresh fruit production, EARTH has created a market for a wide range of other agricultural innovations and products including banana paper, dairy products, marmalades and soil fertility enhancers.

EARTH has sought to maximise commercial opportunities to the benefit of its educational programme and to the surrounding communities. EARTH’s commercial operations provide the university with a growing and sustainable financial resource. Its business practices have also connected EARTH to the private sector, resulting in worldwide alliances and partnerships that are increasing awareness of the University’s mission. Most importantly, EARTH’s commercial operations serve as a functioning example of the three components of sustainability: economic, social and environmental, proving the viability of the sustainable business to its students, graduates, local community members and the industry as a whole.

3.2 Community development: Ghana’s University for Development Studies

The government of Ghana established the University for Development Studies in the northern region in 1992 (Kaburise, 2003). The legislative instrument expressly mandated the university to blend the academic world with that of the community for constructive interaction to develop northern Ghana. The university’s mandate emphasised agricultural sciences, medical and health sciences, and integrated development studies, relying on the resources available in the region.

The University for Development Studies aims to make tertiary education and research directly relevant to communities, especially in the rural areas. It is the only university in Ghana required by law to break from tradition and become innovative in its mission. It is a multi-campus institution, located throughout northern Ghana – a region suffering from serious population pressure and hence vulnerable to natural resource degradation. The region is the poorest in Ghana, with a relatively high child malnutrition rate. The university’s philosophy, therefore, is to promote the study of subjects that will help address poverty.

The pedagogical approach emphasises practice-oriented, community-based, problem-solving, gender-sensitive and interactive learning. It aims to address deep-seated socioeconomic imbalances through well-focused education, research and service. The curricula emphasise community entry, community dialogue, extension and practical tools of inquiry.
Students are required to internalise the importance of local knowledge and to find effective ways of combining it with science. The curricula also incorporate participatory rural appraisal, participatory technology development, and behaviour change communication methodologies to involve the poor in development.

An important component of the emphasis on addressing poverty is the third-trimester field practical programme. The university believes that the most feasible and sustainable way of tackling underdevelopment and poverty is to start from what the people know and understand. By doing so it becomes possible to recognise the extent to which indigenous knowledge is scientific. The field programme aims to institutionalise the concept of bringing science to bear on indigenous knowledge from the outset in the training of young scientists and professionals, to ensure changes in perceptions and attitudes to development.

Under this programme, the third trimester of the academic calendar, eight weeks, is devoted exclusively to fieldwork. All students are required to live and work in rural communities. They identify development goals and opportunities with the people and design ways of attaining the goals together. The programme requires the same groups of students to work in the same locality for the four trimesters of the year, formulating action plans and helping in their implementation.

The university liaises with governmental and non-governmental organisations in the communities for shared learning in the development process. The field exposure helps students build up ideas about development and helps them reach beyond theory. The impact of this innovative training approach is already being seen, with the majority of University for Development Studies graduates working in rural communities.

3.3 Business incubation: the University of Zambia (Konde, 2004)²

In many African countries, the need to reorient universities to play a greater role in the development of their countries has to take centre stage. They can play this role by strengthening their entrepreneurial activities, as well as by supporting national projects, industry and other national centres of excellence.

In 1990 the director of the Computer Centre at the University of Zambia (UNZA) connected a few personal computers to exchange emails within the institution, with Rhodes University in South Africa, and then onwards to the rest of the world. The university network served health institutions, NGOs, governmental and development organisations. In 1994 Zambia became the first sub-Saharan country outside South Africa to get on to the internet.

Zambia benefited from at least three programmes. The Eastern and Southern African Network (ESANET) focused on promoting connectivity among universities in the region; the local project was UNZANET. The lack of human capital forced the UNZA to pool all the resources of related projects at the computer centre. This created a culture of mutual understanding, trust and interest. Similarly, in-house training of users by experts served to popularise the email system and provide technical knowledge.

The connectivity project at the UNZA was successful and highly supported by the government and donors. However, despite high-level interest, it failed to attract any direct support from donors. Early in 1994, the university decided to establish a campus-based company called Zamnet Communication Systems to link the institution to the internet and provide service to commercial customers. At this point the World Bank expressed an interest in covering 80% of the cost of the first year’s operation. It lent
Zamnet the start-up capital, with the condition that the university offer some shareholding in the unit to the public.

The administration worked with customers and other interest groups and intensified marketing. The university provided most of the manpower and the operational space for four years. The number of commercial accounts grew from five to 165 between January and June 1995, and seven months before the lapse of the World Bank loan, Zamnet was generating enough income to buy new equipment.

The commercial lesson

The commercialisation of Zamnet demonstrated that provision of internet services could be good business even in poor countries. The demand for email and internet services was high. Soon after its launch, the link to South Africa became saturated. Zamnet installed a VSAT by late 1996, which was upgraded to 265Kbps by January 1998. Other institutions soon followed. With the experience gained from Zamnet, the national regulator, Zambia Telecommunication Corporation, developed a new unit that specialised in internet service provision.

The economic impact of Zamnet is yet to be fully assessed. However, Zamnet’s market share is estimated at between 70% and 80% of internet users. Therefore many of the country’s businesses, government departments and learning institutions, and most of the internet cafés and telecentres are connecting through Zamnet. The impact of Zamnet in encouraging enterprise development, and thereby creating employment opportunities and livelihood, is immense.

The case demonstrates how countries could utilise international resources through universities to achieve national objectives. It also shows the importance of local management of projects through an accessible and transparent implementing institution, where different players feel comfortable, and the important role of the policy environment and government support.

3.4 Enterprises as incubators of universities: Korea’s Pohang University of Science and Technology

The role of the private sector in supporting training in engineering is a subject of extensive policy debate. Much of the attention has focused on the extent to which the private sector provides market signals for higher education. Little attention, however, has been devoted to the role of the private sector as an incubator of universities. South Korea’s Pohang University of Science and Technology (POSTECH), founded in 1986, offers important policy lessons for the engineering community. It is a product of two innovators: Professor Hogil Kim, the founding president of POSTECH, and Tae-Joon Park, the chair of the Pohang Iron and Steel Company (POSCO). These two had the goal of setting up a leading research university in South Korea.

“While R&D activities begun in the late 1970s provided adequate in-house technical capabilities, POSCO was unable to carry out central research work required for a forward-looking modern corporation. The company was seeking business diversification, anticipating the inevitable decline in steel-making activities of Korea in the early years of the coming century.” (Kim, 1997)

The university started off with a small number of outstanding students who were fully funded and drawn from the top 2% of high school graduates. In 1987 POSTECH
admitted 249 students into nine science and engineering departments. It admitted its first graduate students the following year.

POSCO’s research facilities were transformed into an independent Research Institute of Industrial Science and Technology (RIST) and served as a joint arm of the university and the company, making it a model university-industry partnership. POSTECH places heavy emphasis on research and is emerging as a leader in science and engineering education in Asia. In 1998 AsiaWeek magazine selected POSTECH as the top university in science and technology. In addition, the Ministry of Education has consistently recognised POSTECH for its outstanding leadership in educational reform in the country.

The one major lesson that Africa can take from this case is the role that POSCO, a private company, played in developing POSTECH. POSCO’s initial goal was to train world-class engineers for its operations. It shows that private companies in Africa might successfully support higher education not only for their benefit but also for national economic development. Africa already has several well-established industries that rely heavily on innovations in science and technology that could emulate this model.

Although the costs involved in the creation of POSTECH are currently well beyond the means of most African countries, the model still has the potential to be applied to a variety of fields. Telecommunications firms, for example, that have benefited from the cell phone revolution could explore the possibility of creating leading information and communications schools using POSTECH experiences. Similarly, mining, oil and gas, tourism, and agriculture firms can serve as sources of new innovations in their respective fields.

4 Financing higher education

Financing higher education is probably one of the most contentious issues in the history of higher education. The perceived high costs of running institutions of higher learning have contributed to the dominant focus on primary education in African countries. But this policy focus has also blinded leaders from exploring avenues for supporting higher technical education. Indeed, African countries such as Uganda and Nigeria are experimenting with measures which include focusing government scholarships and lowering tuition for those going into the sciences. There are other long-term measures which include providing tax incentives to private individuals and firms that create and run technical institutes on the basis of agreed government policy. This is an area that Africa has hardly utilised as a way to extend higher technical education to a wider section of society (Juma, 2006).

Mining companies, for example, could support training in the geosciences. Similarly, agricultural enterprises could help to create capacity in agribusiness. Institutions created by private enterprises can also benefit from resident expertise. Governments, on the other hand, will need to formulate policies that allow private sector staff to serve as faculty and instructors in these institutions. Such programs would also provide opportunities for students to interact with practitioners in addition to the regular faculty. Much of the corporate social responsibility investments by private enterprises in Africa could be better used to strengthen the continent’s technical skill base (Mackie et al., 2006). Additional sources of support could include the conversion of the philanthropic arms of various private enterprises into technical colleges located in Africa.
The establishment of the Chalker Foundation for Africa as a UK-based charity is a good example of the growing interest in finding innovative ways of supporting Africa’s future. Its mission is to empower people in Africa to lead healthy and self-sustaining lives. The CFA was created by Baroness Lynda Chalker of Wallasey who served as UK Minister of Overseas Cooperation from 1989 to 1997. The aim of the foundation will be to support and foster the advancement of medical, scientific and educational knowledge in Africa. It will rely on funds transferred from Africa Matters Limited, a consulting firm created by Baroness Chalker. In addition, it will seek contributions from other sources. The Chalker Foundation is an innovative response to Africa’s challenges that has already started its operations by providing fellowships for outstanding students admitted for medical training (Chalker, 2006).

5 Implications and conclusions

African universities and other institutions of higher learning represent a major foundation for promoting economic growth. But their contributions to economic development can be implemented only through a wider focus on long-term technological programmes. Donor agencies can play an important role in leveraging change through support for a range of activities, which include:

5.1 University infrastructure rehabilitation and development

Government support will be needed to rehabilitate and develop university infrastructure – especially universities’ information and communications facilities – to integrate them into the global knowledge community. The R&D infrastructure needs major revamping to put universities at the cutting edge of knowledge. There is potential for governments to consolidate and locate their scientific and technological infrastructure in higher education institutions.

5.2 Institutional design

Institutional design should emphasise bringing research, teaching and community outreach together. For example, medical schools should be more integrated into hospitals, just as agricultural research stations should have a strong teaching role. This process may involve reforms in existing universities, creation of new ones, or upgrading existing institutions. There is an urgent need to take stock of the full scope of research and training facilities in Africa, especially those falling outside the formal rubric of ‘universities’, and explore how they could be harnessed to supplement the contributions of existing universities.

5.3 Curriculum reform

There is a need to reform curricula to introduce creativity, enquiry and entrepreneurship. For example, it is vital to focus attention on technical subjects as prerequisites for technological innovation; nevertheless, it would be necessary to balance this with other fields such as entrepreneurial education, the social sciences and humanities. Also related to the curriculum are changes in pedagogy to emphasise experiential learning. These reforms should also include close cooperation with the private sector and
local communities. Universities that seek to contribute to local economic transformation should integrate more with their communities; students should have greater familiarity with the needs of their communities, and hence need closer extended contacts with their wider environment.

5.4 Innovations in management

For universities and technical institutes to adopt their new role as development partners, a new set of management procedures is necessary. The recommended changes require drastic revisions in student and faculty selection procedures, new incentives and transparency mechanisms, and revised curricula and teaching methods.

Universities should enjoy greater autonomy to allow timely adaptation to a rapidly changing world. The granting of autonomy should, however, be guided by the delivery of community development, rather than being done purely for governance purposes.

References


Notes

1For details on UDS, see Kaburise (2003).
2For more details on the case, see Konde (2004).
3For a survey of corporate social responsibilities approaches, see Mackie et al. (2006).